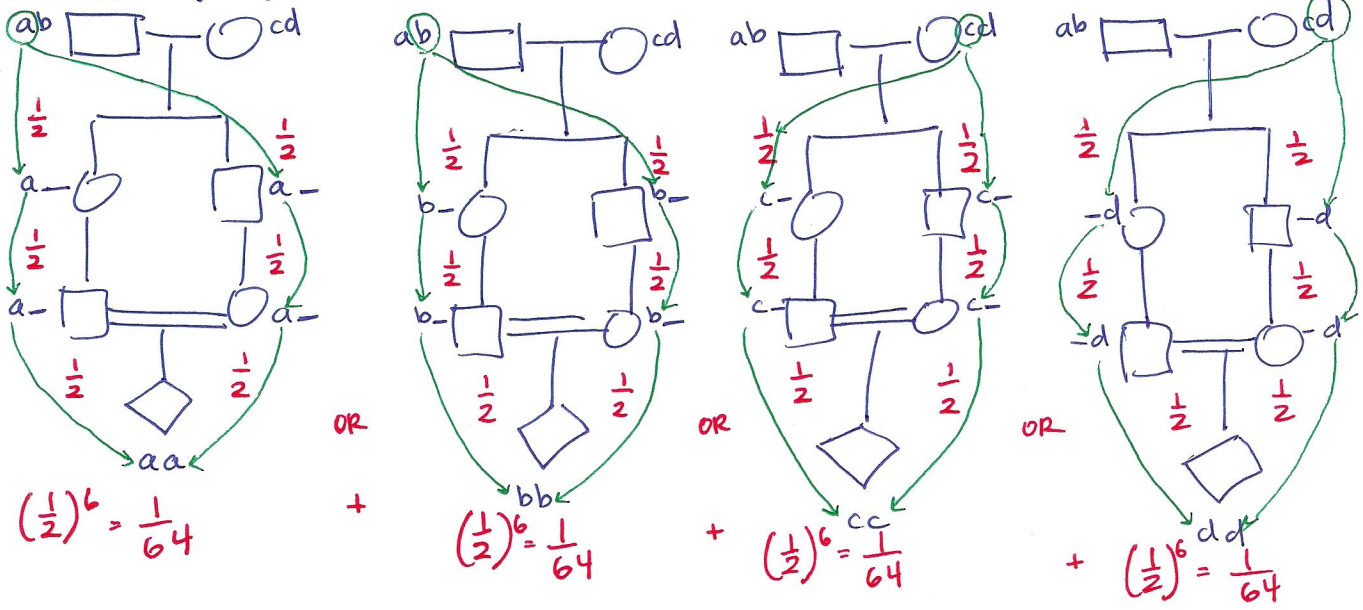
Coeficent of Inbreeding (one locus)

Prob. of inheriting homozygous alleles originating from any one allele at a given locus

At Locus 1, b/n the great grandfather AND the great grandmother there are 4 possible alleles at a given Locus (a, b, c, d)

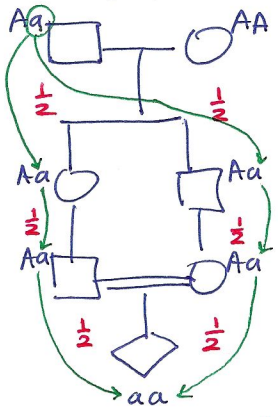


$\left(\frac{1}{2}\right)^6 = \frac{1}{64}$ + $\left(\frac{1}{2}\right)^6 = \frac{1}{64}$ + $\left(\frac{1}{2}\right)^6 = \frac{1}{64}$ + $\left(\frac{1}{2}\right)^6 = \frac{1}{64}$

$= 4\left(\frac{1}{64}\right) = \boxed{\frac{1}{16}}$ = Coefficient of Inbreeding F

Probability that the first child of first cousins will be homozygous for a deleterious allele carried by either great grandparent at a particular locus.

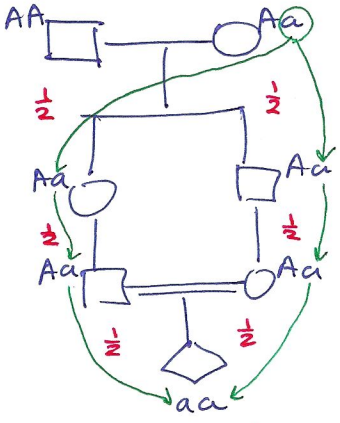
If great grandfather is carrier of deleterious allele



$= \left(\frac{1}{2}\right)^6 = \frac{1}{64}$ +

OR

If great grandmother is carrier of deleterious allele



$= \left(\frac{1}{2}\right)^6 = \frac{1}{64}$

$= 2\left(\frac{1}{64}\right) = \boxed{\frac{1}{32}}$ = prob that first child of first cousins will be homozyg for a deleterious allele carried by either great grandparent at a particular locus